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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/256,034	02/23/1999	MARIE ANGELOPOULOS	YO998-056	9289

7590

09/06/2006

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EXAMINER

CHU, JOHN S Y

ART UNIT PAPER NUMBER

1752

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/256,034

Applicant(s)

ANGELOPOULOS

Examiner

John S. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 9-20 is/are pending in the application.
- 4a) Of the above claim(s) 9-17 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 18 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

This Office action is in response to the amendment filed June 13, 2006.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-6, 18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the photosensitive elements in claims 1 and 6 for the resist material in the method. The recitation of only a polymer fails to be enable the recited resist material which acts as a top coat layer for the anti-reflective layer.

Secondly as an informality, claim 1 and 6 lack the units of the recited thickness for the layer of material which acts as the planarizing layer and antireflective layer.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 6 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by SINTA et al (5,886,102) or PAVELCHEK et al (5,939,236) in view of DING et al (5,981,145) .

The claimed invention is drawn to the following:

6. (Currently amended) A method comprising :

disposing on a surface a layer of material, said layer of material having a thickness of between about 1000 and 10000 and comprising an optically tuned planarizing layer, said tuned layer having an index of refraction layer (n) from about 1.4 to about 2.1, and an extinction coefficient (k) from about 0.1 to 0.6 at 365, 248 193 and 157 nm comprising a polymeric resin, said polymeric resin being selected from the group consisting of novolac/diazonaphthoquinone resin, polysulfones, polyhydroxystyrene based materials, ~~polyimide~~ polyimide materials cast from solvents containing no amines, and blends thereof, said resin containing a covalently bonded chromophore used to modulate the optical properties of said material and a variety of wavelengths;;

disposing on said layer, a top layer of material which is a resist material, wherein when said top layer resist material is a bilayer resist, said resist is selected from the group consisting of Si-containing acrylates/methacrylates, Si-containing styrene derivatives, Si-containing norbornene materials, silsesquioxanes, silanes, siloxanes, and when said top layer resist material is a top surface imaging resist, said resist is selected from the group consisting of acrylates/methacrylates, styrene based polymers and cyclic olefins;

said material having a crosslink density sufficiently high that said material and said resist do not substantially intermix;

SINTA et al discloses the claimed invention at Examples 9, 13 and 14 wherein the claimed resist material comprises methacrylates. The crosslinker is a p-nitrobenzyl tosylate, and includes a crosslinker which is a glycouril compound.

SINTA et al lacks the recited use of an electron beam as an exposure source.

DING et al is cited to disclose the functional equivalence of UV, electron beam and X-ray exposure sources in photolithographic processes, see the Background of the Invention in column 1, lines 23-30.

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It would have been *prima facie* obvious to one of ordinary skill in the art of photolithographic processing to use any of the listed exposure sources in photolithographic processing, namely an electron beam in place of a UV source as disclosed in SINTA et al and reasonably expect same or similar results as recited in SINTA et al for excellent image formation.

4. Claims 1-5, 18 and 20 are seen as allowed upon correction of the 35 U.S.C. 112 issues above.

The recited thickness of the anti-reflective layer is not disclosed in the prior art of record, wherein it is claimed to be thicker than the top layer resist. Even though the ingredients in the anti-reflective layer and the photoresist are disclosed in PAVELCHEK et al, the thickness of the anti-reflective layer in the Examples is thinner than the recited photoresist layer.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. PAVELCHEK et al (6,190,839) is cited of interest and cumulative to the rejection above. Likewise, DING et al (5,994,430) is cited of interest and is cumulative to the rejection as stated above.

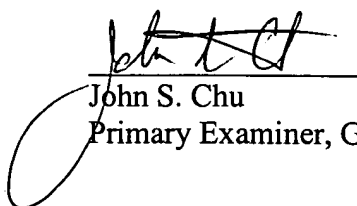
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Chu whose telephone number is (571) 272-1329. The examiner can normally be reached on Monday - Friday from 9:30 am to 6:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Cynthia Kelly, can be reached on (571) 272-1526

The fax phone number for the USPTO is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PMR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John S. Chu
Primary Examiner, Group 1700

J.Chu
September 3, 2006